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(74) Agents: **SCILLETTA, Andrea** et al.; Ing. Barzano' & Zanardo Roma S.p.A., Via Piemonte, 26, I-00187 Roma (IT).

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(71) Applicant (for all designated States except US): **UNIVERSITA' DEGLI STUDI "ROMA TRE"** [IT/IT]; Via Ostiense 159, I-00154 Roma (IT).

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(72) Inventor; and

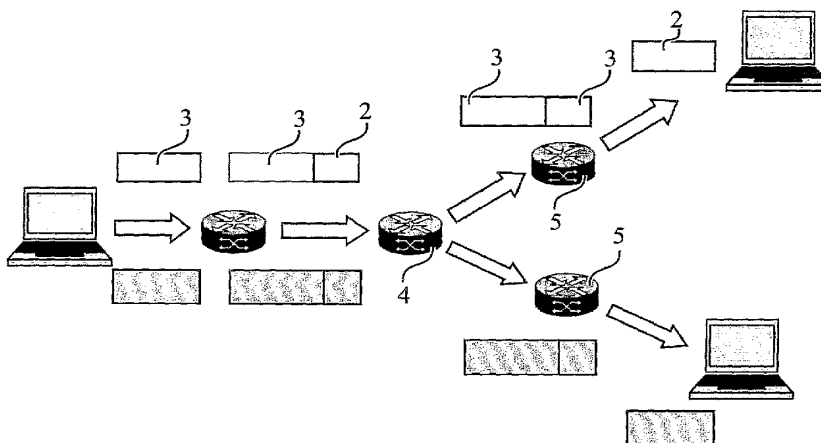
(75) Inventor/Applicant (for US only): **CINCOTTI, Gabriella** [IT/IT]; Universita' Degli Studi Roma Tre, Dip. Di Elettronica Applicata, Via Della Vasca Navale 84, I-00146 Roma (IT).

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(54) Title: OPTICAL DEVICE FOR SIMULTANEOUSLY GENERATING AND PROCESSING OPTICAL CODES

$$|T_{sk}(f)| = \prod_{v=0}^{V-1} F_v \left(a_v f + \frac{S_{sk}}{N_k \tau} \right) \quad (I)$$



(57) Abstract: The invention relates to an optical device, apt to generate and process optical codes at least one wavelength, comprising P inputs s , with $1 \leq s \leq P$, and $P \geq 1$, and N outputs k , with $1 \leq k \leq N$ and $N \geq 1$, characterised in that it is apt to simultaneously generate and process $N_c \geq 2$, made of C chips with time interval τ , with $C \geq 2$, characterised in that the transfer function $T_{sk}(f)$ from the input s to the output k satisfies the following formula: where: F_v is a transfer function of an optical filter, for $v=0,1,\dots,V-1$, a_v is a constant value, for $v=0,1,\dots,V-1$, S_{sk} is an integer number ($S_{sk} \in \mathbb{Z}$), N_k is a constant value, for $k=2,\dots,N$, and V is a positive integer number with $1 \leq V \leq \log_2 N$. The invention further relates to a set of optical codes, apt to be generated, in particular, by such optical device, and to networks and apparatus comprising such optical device.



For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.